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PACHECO ROSS ARCHITECTS  
CES  
FUSS & O'NEILL  
ODEH ENGINEERS  
RLB

LEXINGTON POLICE HEADQUARTERS

# Agenda

- Police Station Design Development Update
  - Red List status update
  - LEED/Lex Checklist
  - Needs for Design Development phase completion and committee sign-offs
  - 90/110 bidding strategy discussion
  - PV Canopies and Fletcher Park considerations
  - Interior design

# RED LIST



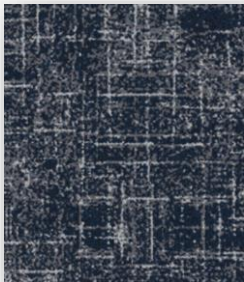
# RED LIST STATUS

Project is pursuing Red List compliance for the following CSI Divisions:

- *Division 3: Concrete*
- *Division 7: Thermal Moisture Protection*
- *Division 9: Finishes*
- *Division 12: Furnishings*



CARPET TILE EXAMPLE:



Bentley NexStep  
“Redacted”

- Conference Rooms / Offices Option

# Declare.

NexStep® Cushion Tile  
Bentley Mills Inc

**Final Assembly:** Industrial  
**Life Expectancy:** 15 Year  
**End of Life Options:** See Back Program, Recycled

**Ingredients:**  
**Backing:** Calcium Carbide, calcium, ether with 12.3 chemicals; Calcium carbide with ethene; Polypropylene polymer with ethene; Polyisocyanate; Aluminum trihydrate; Polyphenol; Magnesium salt (11); Polyhydroxy-2-Propanoic acid; mono-C10-16-alkyl Benzenesulfonic acid; Poly(mono(1,6-dioxo-1,6

Finishes (< 1%)<sup>1</sup>

1. LBC Temp Exception R  
Declare

**Living Building Challenge Criteria:** Compliant

**I-13 Red List:**  
☐ LBC Red List Free  
☒ LBC Red List Approved  
☐ Declared

**I-10 Interior Performance:** CDPH Standard Method v13-2010  
**I-14 Responsible Sourcing:** Not Applicable

BMI-0001  
EXP: 01 JUN 2022  
Original Issue Date: 2017

MANUFACTURER IS RESPONSIBLE FOR LABEL ACCURACY  
INTERNATIONAL LIVING FUTURE INSTITUTE™ [living-future.org/declare](http://living-future.org/declare)

## Library Summary

**Product Name**  
NexStep Cushion Tile

**Manufacturer**  
NexStep Cushion Tile

**Product Type**  
Tile Carpeting

**Product Tags**  
[View All Tags](#)

**Score** 85

**Description**  
DECLARE PRODUCT |

**Specification Notes**  
No Notes

**Ingredient Disclosure**  
Declare Listed - 0-99%

**Red List Status**  
Red List Free

**VOC Status**  
VOC Not Applicable

**VOC Emissions**  
CDPH Compliant

**FSC Status**  
FSC Not Applicable

[VIEW IN LIBRARY](#)

From the **red2green** library

From the **manufacturer**

Red2Green

Home / Workspace

Lexington Police Station

Results: 65

Active Filters: 0

Products

Specifications

ADVANCED FILTERS

COMMUNICATION FILTERS

EXPORT

SHOW RECENTLY ADDED

WORKSPACE

LIBRARY

COMMUNICATIONS

096113 TILE CARPETING

COLUMNS

BATCH ACTIONS

096500 Resilient Flooring (1 records)

+ ADD

096513 Resilient Base and Accessories (0 records)

+ ADD

096519 Resilient Tile Flooring (0 records)

+ ADD

096536 Static Control Resilient Flooring (0 records)

+ ADD

096566 Resilient Athletic Flooring (0 records)

+ ADD

096600 Terrazzo Flooring (0 records)

+ ADD

096723 Resinous Flooring (0 records)

+ ADD

096813 Tile Carpeting (2 records)

+ ADD

R2D ID

Product Name

Product Type

Manufacturer

Consideration

Materials Researcher

Progress

LBC Materials Status

Approval Status

Communications

Stages

Groups

v1 LBC ID

Actions

LPS-40540

Walk Off Carpet/Walk Off Carpet System

Considered

Unassigned

To Be Determined

+

+

79811

LPS-41320

NeoStep Cushion Tile

Carpet

Bentley Mills

Considered

Unassigned

To Be Determined

+

+

098413 Fixed Sound-Absorptive Panels (0 records)

+ ADD

099100 Painting (7 records)

+ ADD

R2D ID

Product Name

Product Type

Manufacturer

Consideration

Materials Researcher

Progress

LBC Materials Status

Approval Status

Communications

Stages

Groups

v1 LBC ID

Actions

LPS-30156

[Primal Primer](#)

Interior Gypsum Board Primer

[Sherwin-Williams](#)

Proposed Option

Unassigned

Researching

To Be Determined

+

+

69021

LPS-30157

[Primal 400 Zero VOC Interior Latex Primer](#)

Interior Gypsum Board Primer

[Sherwin-Williams](#)

Proposed Option

Unassigned

Researching

To Be Determined

+

+

69022

LPS-30035

[Primal 200 Zero VOC Interior Latex Primer](#)

Interior Gypsum Board Primer

[Sherwin-Williams](#)

Approved For Research

Unassigned

LBC Non Compliant

Approved

+

+

68891

LPS-30034

[SP1202HDE Interior Latex Quick Dry Sealer 6-2](#)

Interior Gypsum Board Primer

[PPG Architectural Coatings](#)

Approved For Research

Unassigned

Researching

To Be Determined

+

+

68890

LPS-30037

[ECOS Interior Wall Primer](#)

Interior Gypsum Board Primer

[Imperial Paints, LLC](#)

Proposed Option

Unassigned

Researching

To Be Determined

+

+

68893

LPS-30036

[Master Painter Ultra Low VOC Interior Primer / Sealer](#)

Interior Gypsum Board Primer

[Coverdale Paint](#)

Proposed Option

Unassigned

Researching

To Be Determined

+

+

68892

LPS-30033

[Ultra Spec 500 Interior Primer M524](#)

Interior Gypsum Board Primer

[Benjamin Moore](#)

Approved For Research

Unassigned

LBC Compliant

Approved

+

+

68889

122113 Horizontal Louver Blinds (0 records)

+ ADD

122413 Roller Window Shades (0 records)

+ ADD

123631 Simulated Stone Countertops (0 records)

+ ADD

123816 Entrance Floor Grilles (0 records)

+ ADD

POLICE HEADQUARTERS | SUSTAINABILITY

## RED LIST STATUS

### Division 3:

- *Only (1) product so far has been identified as non-redlist compliant*
  - *Crystalline waterproofing admixture is being utilized as an additional layer of protection for the Mechanical Room on the 2<sup>nd</sup> floor.*
  - *Some products are red-list free while others are limited on their product disclosures and are unknown.*

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# RED LIST STATUS

## Division 7:

- No concerns or items that are proposed to contain red-list at this time
- Envelope has been established
- Next push in Div 07 is sealants

Product Type	Product	Manufacturers	Certification
Poly Iso Rigid Board	VersiCore NH Polyiso Insulation EnergyGuard NH HD Polyiso SecurShield POLYISO H Shield F	Carlisle GAF Carlisle Hunter Panels	declare declare declare Project Listed
MINERAL WOOL INSULATION	THERMAFIBER® MINERAL WOOL INSULATION Knauf Insulation EcoBatt Unfaced GreenFiber Cellulose Insulation	Owens Corning Knauf GreenFiber	declare declare declare
FLUID APPLIED AIR & VAPOR BARRIER	R guard cat 5 Air-Bloc® 16MR Air-Bloc® 17MR	Prosoco Henry Henry	declare declare declare
GLASS MAT SHEATHING	Securock Brand Glass-Mat Sheathing Sheetrock Glass Mat Mold Tough VHI Firecode X	United States Gypsum United States Gypsum	declare Project Listed
METAL FRAMING	R-Stud, LLC MBA Metal Framing Marino/WARE	R-Stud, LLC MBA Metal Framing Marino/WARE	declare declare Project Listed
GYPSPUM WALL BOARD	GOLD BOND® XP® FIRE-SHIELD® GYPSPUM BOARD GIB Fyreline Plasterboard USG Sheetrock Brand EcoSmart Panels Firecode 30	National Gypsum Winstone Wallboards USG	Project Listed declare declare
CMU	CMU CMU CMU	Jandris Block Angelus Block Company R. Ducharme	RedList Compliant declare declare
Mortar	Mortar Mix Mason Mix 1136 4-XLT Mortar Mix Type S	Quikrete Laticrete Sakrete	declare declare declare
Primer (paint)	Ultra Spec HP® Acrylic Primer Ultra Spec® 500 Interior Primer ECOS Interior Wall Primer	Benjamin Moore & Co. Benjamin Moore & Co. Imperial Paints, LLC	declare declare declare
Finish Paints	Ultra Spec® EXT Flat Finish Air Pure Paints Wall Paints Natura® No-VOC Paint	Benjamin Moore & Co. Imperial Paints, LLC Benjamin Moore & Co.	declare declare C2C+/approved





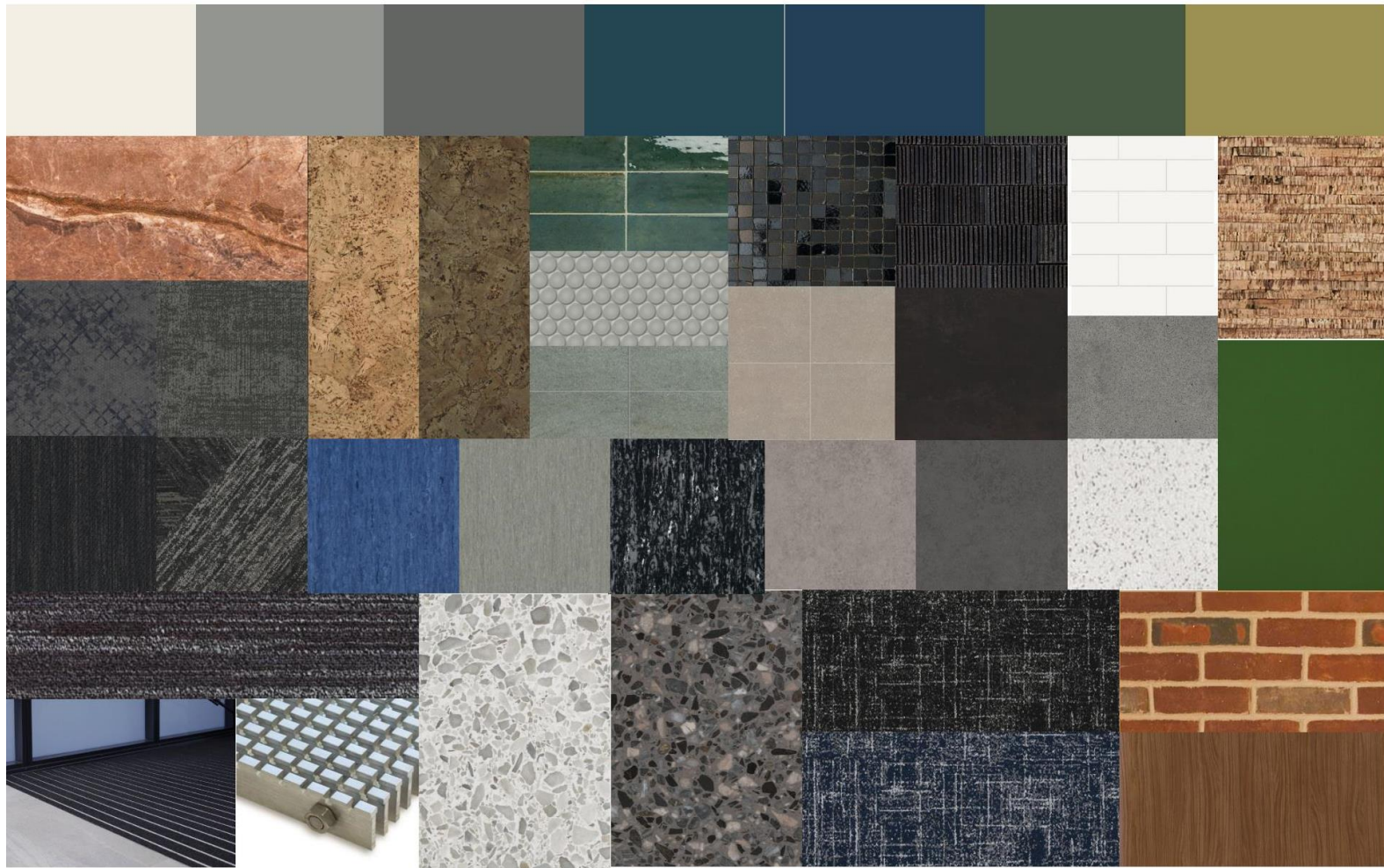
# RED LIST STATUS

## Division 9:

- All interior finishes, adhesives and materials are red-list free
- 2 exceptions have been noted, Terrazzo and Resinous Epoxy.

Product Type	Product	Manufacturers	Certification
CARPET TILE	NexStep	Bentley Mills	Declare
	EcoWorx	Shaw Contract	Declare
	Ethos	Tarkett	Declare
PAINT	Ultra Spec 500 Interior	Benjamin Moore	Declare
	Ecos Paints	Imperial Paints, LLC	Declare
	EcoSelect	Sherwin Williams	Green Globes
MILLWORK	Compact	Wilsonart	HPD
	Purebond	Columbia Forest Products	Declare
	Strato	Hi-Macs	Greenguard
ENTRY SYSTEMS	Mighty Track	Mats Inc	LEED Letter
	Advance Flooring Entrance Matting	Advance Flooring Systems	Declare
	Nylon Modular Carpet	Mohawk Group	Declare
COUNTERTOPS	Corian Solid Surface	Dupont	Declare
	Cambria Quartz	Cambria	Declare
	Avonite Solid Surface	Aristech Surfaces, LLC	Declare
FLOOR TILE	Crossville Porcelain Tiles	Crossville, Inc	Declare
	Atlas Concorde Porcelain Tiles and Slabs	Ceramiche Atlas Concorde	Declare
	Mosa C2C Porcelain Floor Tiles	Royal Mosa	Declare
WALL TILE	Extruded Serioes Porcelain Tile	Limelight	Declare
	Crossville Porcelain Tile Panels	Crossville, Inc	Declare
	Mosa C2C Ceramic Wall Tile	Royal Mosa	Declare
UPHOLSTERY	Gemma Multi	Maharam	Greenguard
	Polyester & Polyester Compound Fabrics	Luum Textiles	Declare
	Cyber	Momentum	Greenguard





# INTERIOR FINISHES

## OUTLIERS | NON-COMPLIANT PRODUCTS

### Epoxy Terrazzo Part A - Resin

- Specified in **Lobby**
- Contains **Epichlorohydrin-bisphenol A Resin**
- **LT-P1** Greenscreen score (*what this means ~ meets hazard classifications, but there is some uncertainty and further research is needed*)

### Epoxy Terrazzo Part B - Hardener

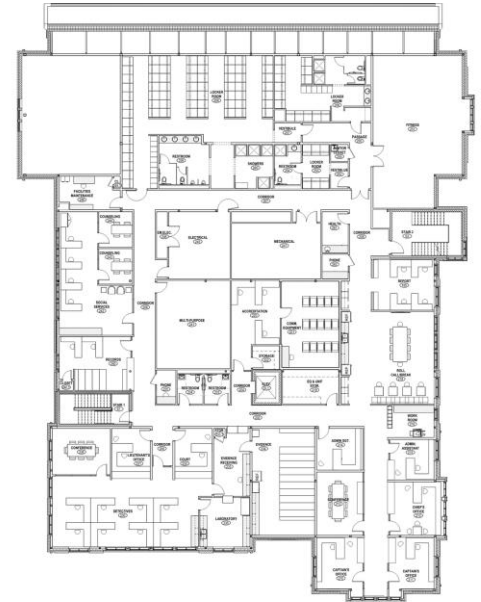
- Specified in **Lobby**
- Contains **4-Nonylphenol (Branched)**
- **LT-P1** Greenscreen score

### Exception

- DuraCryl Durabella Seamless Terrazzo
- Uses a vegetable oil polymer to replace 2-part epoxy



**FIRST FLOOR**



**SECOND FLOOR**

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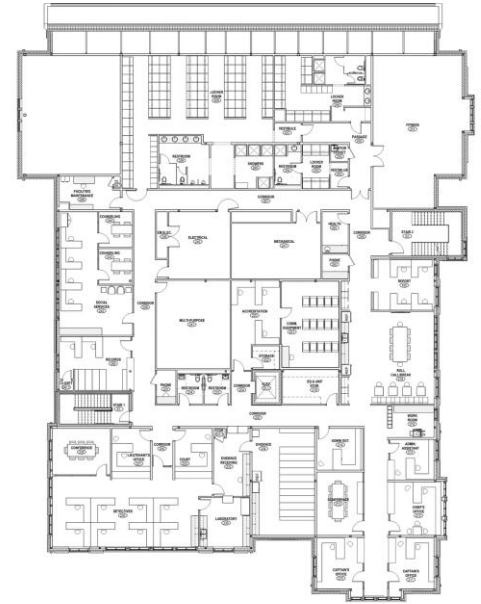
## OUTLIERS | NON-COMPLIANT PRODUCTS

### Resinous Epoxy Flooring

- Specified in **Prisoner Processing**
- Redlist status – Unknown
- *Safe to assume it will have a similar score as Terrazzo.*
- *This is the preferred finish material in detention areas for:*
  - Durability
  - Cleanability
  - finishes comply with Ma DPH requirements
  - Non-porous
  - Less maintenance



**FIRST FLOOR**



**SECOND FLOOR**

.....

# RED LIST STATUS

## Division 12:

- Construction Contract
  - *Simulated stone counters (quartz) are redlist compliant*
  - *Window shades – not specified yet but we are targeting redlist complaint fabrics*
  - *Fabrics for built in furniture is redlist complaint*
- FFE Contract
  - *Furniture design and specification will begin mid-summer of 2022*

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**LEED / LEX**



# NEW ECOLOGY



Community-Based Sustainable Development

## Station Model Update

- Sustainability update:
  - LEED/LEX
  - Energy Model



# LEED: V4 New Construction

## Achieve LEED Gold

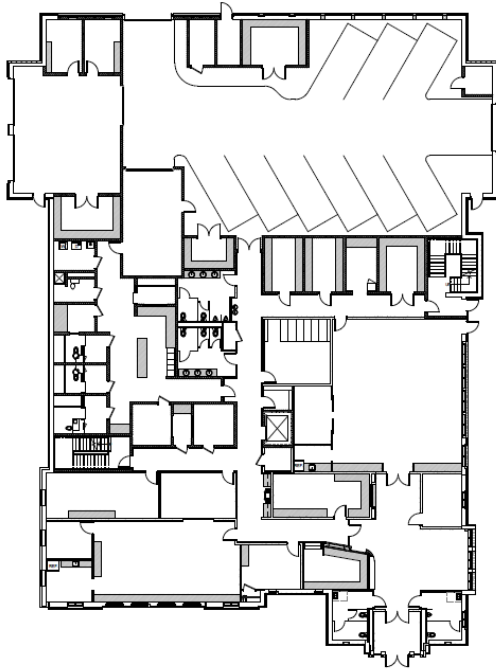
- Current Projection: Yes: 62; Maybe: 17
- Lexington Requirements in Purple

Y	?	N		
1			Credit	Integrative Process
7	0	25	Credit	Location and Transportation
1	16		Credit	LEED for Neighborhood Development Location
1			Credit	Sensitive Land Protection
1	1		Credit	High Priority Site
2	3		Credit	Surrounding Density and Diverse Uses
1	5		Credit	Access to Quality Transit
1			Credit	Bicycle Facilities
1			Credit	Reduced Parking Footprint
1			Credit	Green Vehicles
8	2	0	Credit	Sustainable Sites
Y			Prereq	Construction Activity Pollution Prevention
1			Credit	Site Assessment
2			Credit	Site Development - Protect or Restore Habitat
1			Credit	Open Space
3			Credit	Rainwater Management
1	2		Credit	Heat Island Reduction
1			Credit	Light Pollution Reduction
4	2	5	Credit	Water Efficiency
Y			Prereq	Outdoor Water Use Reduction
Y			Prereq	Indoor Water Use Reduction
Y			Prereq	Building-Level Water Metering
1	1		Credit	Outdoor Water Use Reduction
2	1	3	Credit	Indoor Water Use Reduction
1			Credit	Cooling Tower Water Use
1			Credit	Water Metering
18	7	8	Credit	Energy and Atmosphere
Y			Prereq	Fundamental Commissioning and Verification
Y			Prereq	Minimum Energy Performance
Y			Prereq	Building-Level Energy Metering
Y			Prereq	Fundamental Refrigerant Management
5	1		Credit	Enhanced Commissioning
7	5	6	Credit	Optimize Energy Performance - The town will target onsite building energy use intensity (kBtu/sq ft) for new buildings to be 30% less than ASHRAE 90.1 (current version)
1			Credit	Advanced Energy Metering
1	1		Credit	Demand Response - Install and properly maintain a building management system to track and manage peak demand for energy cost reduction and emergency load shedding
3			Credit	Renewable Energy Production - Target at least 20% onsite renewable energy, may be supplemented with offsite energy.

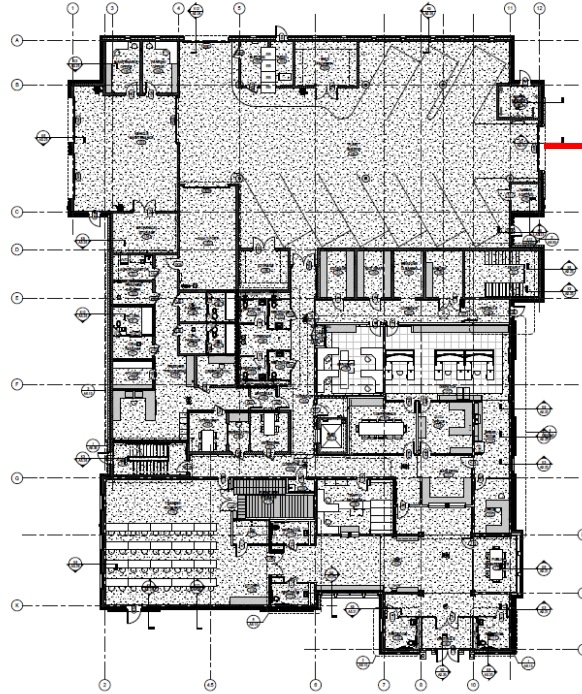
	Y	Lex	Utilize energy storage when cost effective to lower peak demand charges and integrate with onsite solar	
	1	Credit	Commissioning/Retro-Commissioning	1
	2	Credit	Enhanced Refrigerant Management	2
	Y	Lex	Green Power and Carbon Offsets	
	Y	Lex	Evaluate and present options for achieving net zero energy use	
	Y	Lex	All electric, zero emissions on site design (excluding fuel for emergency backup power generators and backup heating systems).	
5	4	2	<b>Materials and Resources</b>	<b>13</b>
	Y	Prereq	Storage and Collection of Recyclables	Required
	Y	Prereq	Construction and Demolition Waste Management Planning	Required
	3	Credit	Building Life-Cycle Impact Reduction	5
	1	Credit	Building Product Disclosure and Optimization - Environmental Product Declarations	2
	1	Credit	Building Product Disclosure and Optimization - Sourcing of Raw Materials	2
	1	Credit	Building Product Disclosure and Optimization - Material Ingredients	2
	2	Credit	Construction and Demolition Waste Management	2
11	2	3	<b>Indoor Environmental Quality</b>	<b>16</b>
	Y	Prereq	Minimum Indoor Air Quality Performance	Required
	Y	Prereq	Environmental Tobacco Smoke Control	Required
	2	Credit	Enhanced Indoor Air Quality Strategies	2
	2	Credit	Low-Emitting Materials	3
	1	Credit	Construction Indoor Air Quality Management Plan	1
	1	Credit	Indoor Air Quality Assessment	2
	1	Credit	Thermal Comfort	1
	2	Credit	Interior Lighting	2
	1	Credit	Daylight	3
	1	Credit	Quality Views	1
	1	Credit	Acoustic Performance	1
	Y	Lex	Enhanced Filtration - Install and properly maintain particulate matter filters as appropriate for building type and use to protect health of the occupant.	
	Y	Lex	Indoor CO2 levels per Lexington Board of Health guidelines. (BUH Memo dated December 18, 2016, Table 1).	
	Y	Lex	Toxics - Avoid the use of red list substances as recommended by Lexington Board of Health (memo dated March 4, 2018), except when no practical alternative is available. Utilize Healthy Building Network (or equivalent) information in the design and selection of materials and consider using products and services established by the Environmentally Preferable Purchasing program or other successor program of the Commonwealth of Massachusetts or other similar cooperative purchasing programs	
4	0	2	<b>Innovation</b>	<b>6</b>
	1	Credit	Innovation : Green Building Education	1
	1	Credit	Innovation : Purchasing - Lamps	1
	1	Credit	Exemplary Performance: Renewable Energy Production (15%)	1
	1	Credit	Innovation	1
	1	Credit	Innovation	1
	1	Credit	LEED Accredited Professional	1
4	0	0	<b>Regional Priority</b>	<b>4</b>
	1	Credit	Regional Priority: Renewable Energy Production (Achieve 3 points)	1
	1	Credit	Regional Priority: Building Life Cycle Impact Reduction (Achieve 2 points)	1
	1	Credit	Regional Priority: Site Development - Protect or Restore Habitat (Achieve 2 points)	1
	1	Credit	Regional Priority: Optimize Energy Performance (Achieve 8 points)	1
	Y	Lex	Design Procedure: The resilience level for a particular building shall be determined in consultation with the building stakeholders and shall be consistent with the planned use of the building in the Town's Emergency Management Plan	
62	17	45	<b>TOTALS</b>	<b>Possible Points: 110</b>
Certified: 40 to 49 points, Silver: 50 to 59 points, Gold: 60 to 79 points, Platinum: 80 to 110				
Lexington minimum target range is 50-59 points				



# Design Update -1F



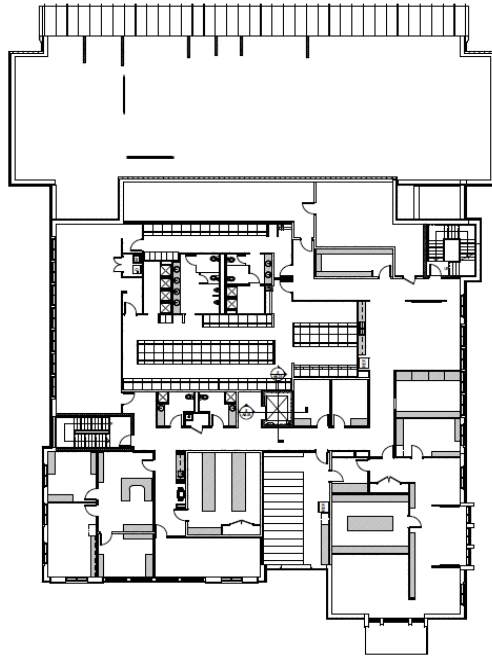
Old Drawing



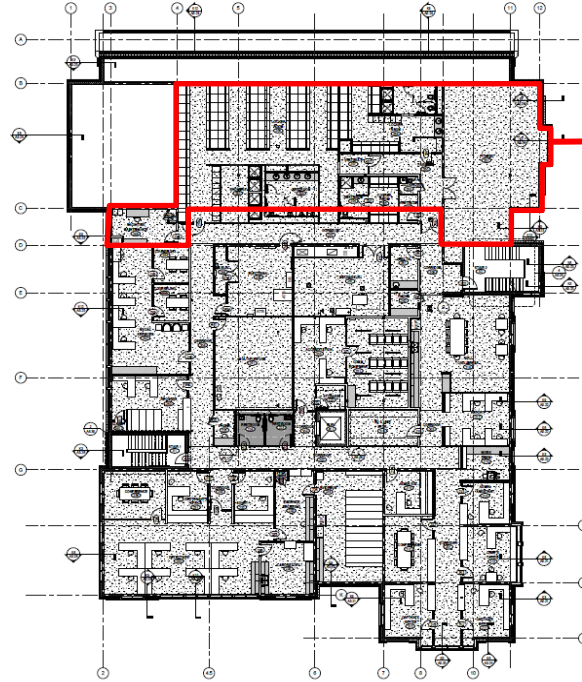
New Drawing

Floor configuration is alternated, but the total floor area of the ground floor remains the same.

# Design Update -2F



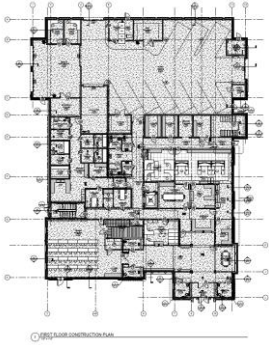
Old Drawing



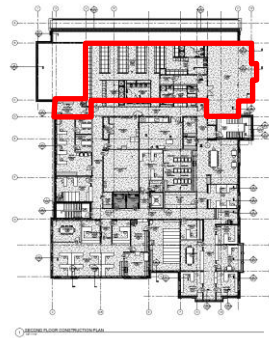
Office Area Increased by 4050 SF

New Drawing

# eQUEST Model Update



1F – use existing zones in the model



2F – add an additional office zone in the energy model to represent the highlighted area

# eQUEST Model Result - Old



Project Information		Utility Rates	
Project Name	Lexington Police Station	Electricity (Low)	0.123 \$/kwh
Client	Tecton Architects	Natural Gas (Low)	1.130 \$/therm
Rating Method	ASHRAE 90.1-2016	Electricity (Mid)	0.143 \$/kwh
Date	12/13/2021	Natural Gas (Mid)	1.480 \$/therm
Building Type	Police Station	Electricity (High)	0.163 \$/kwh
Project Area total (ft <sup>2</sup> )	30,000	Natural Gas (High)	1.840 \$/therm

## Cost Saving Analysis

End Use	Baseline - ASHRAE 90.1-2016					End Use	ECM 2 -Air Source VRF					Energy Savings ECM 2 VS. Baseline
	Electricity (kWh)	Natural Gas (Therms)	Steam (MMBtu)	Total Energy Usage (kBtu)	Percent of Total (%)		Electricity (kWh)	Natural Gas (Therms)	Steam (MMBtu)	Total Energy Usage (kBtu)	Percent of Total (%)	Percent (%)
Interior Lighting	121.220	-	-	413.603	24.0%	Interior Lighting	90.915	-	-	310.202	25.6%	25%
Exterior Lighting	2.336	-	-	7.970	0.5%	Exterior Lighting	2.336	-	-	7.970	0.7%	0%
Misc. Equipment	150.339	-	-	512.957	29.8%	Misc. Equipment	150.339	-	-	512.957	42.3%	0%
Space Heating	296	3.354	-	336.436	19.5%	Space Heating	27.477	-	-	93.751	7.7%	72%
Space Cooling	66.108	-	-	225.560	13.1%	Space Cooling	48.920	-	-	166.917	13.8%	26%
Heat Rejection	-	-	-	-	0.0%	Heat Rejection	-	-	-	-	0.0%	n/a
Pumps & Aux	2.960	-	-	10.100	0.6%	Pumps & Aux	1.916	-	-	6.537	0.5%	35%
Ventilation Fans	56.323	-	-	192.172	11.2%	Ventilation Fans	24.300	-	-	82.912	6.8%	57%
Heat Pump Supplement	-	-	-	-	0.0%	Heat Pump Supplement	2.358	-	-	8.045	0.7%	0%
Domestic Hot Water	6.600	-	-	22.519	1.3%	Domestic Hot Water	6.600	-	-	22.519	1.9%	0%
Total Energy by Utility	406.182	3.354	-	1,721.317	100%	Total Energy by Utility	355.161	-	-	1,211.811	100%	
Site Energy (kBtu)	1,385.892	335.425	-			Site Energy (kBtu)	1,211.811	-	-			Energy Savings
Site EUI (kBtu/ft <sup>2</sup> )				57						40		30%
Total Cost by Type (Low)	\$ 49,839	\$ 3,790	\$ -			Total Cost by Type (Low)	\$ 43,578	\$ -	\$ -			Cost Savings
Total Energy Cost				\$3,629		Total Energy Cost				\$3,578		19%
Total Cost by Type (Mid)	\$ 57,922	\$ 4,964	\$ -			Total Cost by Type (Mid)	\$ 50,646	\$ -	\$ -			Cost Savings
Total Energy Cost				\$6,886		Total Energy Cost				\$5,646		19%
Total Cost by Type (High)	\$ 66,045	\$ 6,172	\$ -			Total Cost by Type (High)	\$ 57,749	\$ -	\$ -			Cost Savings
Total Energy Cost				\$7,217		Total Energy Cost				\$7,749		20%

Heating: boiler 80% ef  
Cooling: 9.3 EER  
No ERV

Heating: 4.2COP  
Cooling: 4.6 COP  
Assumes: iPURY-P72  
25% LPD reduction

**Cost Saving Analysis**

End Use	Baseline - ASHRAE 90.1-2016					End Use	ECM 2 -Air Source VRF					Energy Savings ECM-2 VS. Baseline	
	Electricity (kWh)	Natural Gas (Therms)	Steam (MMBtu)	Total Energy Usage (kBtu)	Percent of Total (%)		Electricity (kWh)	Natural Gas (Therms)	Steam (MMBtu)	Total Energy Usage (kBtu)	Percent of Total (%)	Percent (%)	
Interior Lighting	121,220	-	-	413,603	24.0%	Interior Lighting	90,915	-	-	310,202	25.6%	25%	
Exterior Lighting	2,336	-	-	7,970	0.5%	Exterior Lighting	2,336	-	-	7,970	0.7%	0%	
Misc. Equipment	150,339	-	-	512,957	29.8%	Misc. Equipment	150,339	-	-	512,957	42.3%	0%	
Space Heating	296	3,354	-	336,436	19.5%	Space Heating	27,477	-	-	93,751	7.7%	72%	
Space Cooling	66,108	-	-	225,560	13.1%	Space Cooling	48,920	-	-	166,917	13.8%	26%	
Heat Rejection	-	-	-	-	0.0%	Heat Rejection	-	-	-	-	0.0%	n/a	
Pumps & Aux	2,960	-	-	10,100	0.6%	Pumps & Aux	1,916	-	-	6,537	0.5%	35%	
Ventilation Fans	56,323	-	-	192,172	11.2%	Ventilation Fans	24,300	-	-	82,912	6.8%	57%	
Heat Pump Supplement	-	-	-	-	0.0%	Heat Pump Supplement	2,358	-	-	8,045	0.7%	0%	
Domestic Hot Water	6,600	-	-	22,519	1.3%	Domestic Hot Water	6,600	-	-	22,519	1.9%	0%	
Total Energy by Utility	406,182	3,354	-	1,721,317	100%	Total Energy by Utility	355,161	-	-	1,211,811	100%		
Site Energy (kBtu)	1,385,892	335,425	-			Site Energy (kBtu)	1,211,811	-	-			Energy Savings	
Site EUI (kBtu/ft²)	57					40						30%	
Total Cost by Type (Low)	\$ 49,839	\$ 3,790	\$ -			Total Cost by Type (Low)	\$ 43,578	\$ -	\$ -			Cost Savings	
Total Energy Cost	\$ 53,629					Total Energy Cost	\$ 43,578					19%	
Total Cost by Type (Mid)	\$ 57,922	\$ 4,964	\$ -	62,886		Total Cost by Type (Mid)	\$ 50,646	\$ -	\$ -	50,646		Cost Savings	
Total Energy Cost	\$ 62,886					Total Energy Cost	\$ 50,646					19%	
Total Cost by Type (High)	\$ 66,045	\$ 6,172	\$ -	72,217		Total Cost by Type (High)	\$ 57,749	\$ -	\$ -	57,749		Cost Savings	
Total Energy Cost	\$ 72,217					Total Energy Cost	\$ 57,749					20%	

Heating: boiler 80% et  
Cooling: 9.3 EER  
No ERV

Heating: 4.2COP  
Cooling : 4.6 COP  
Assumes :PURY-P72  
25% LPD reduction

# eQUEST Model Result - New



Project Information		Utility Rates	
Project Name	Lexington Police Station	Electricity (low)	0.123 \$/kwh
Client	Tecton Architects	Natural Gas (low)	1.130 \$/therm
Rating Method	ASHRAE 90.1-2016	Electricity (Mid)	0.143 \$/kwh
Date	12/13/2021	Natural Gas (Mid)	1.480 \$/therm
Building Type	Police Station	Electricity (High)	0.163 \$/kwh
Project Area total (ft <sup>2</sup> )	34,050	Natural Gas (High)	1.840 \$/therm

## Cost Saving Analysis

End Use	Baseline - ASHRAE 90.1-2016					End Use	ECM 2 -Air Source VRF					Energy Savings ECM 2 vs. Baseline
	Electricity (kWh)	Natural Gas (Therms)	Steam (MMBtu)	Total Energy Usage (kBtu)	Percent of Total (%)		Electricity (kWh)	Natural Gas (Therms)	Steam (MMBtu)	Total Energy Usage (kBtu)	Percent of Total (%)	
Interior Lighting	151,574	-	-	517,170	25.2%	Interior Lighting	113,680	-	-	387,876	29.4%	25%
Exterior Lighting	2,336	-	-	7,970	0.4%	Exterior Lighting	2,336	-	-	7,970	0.6%	0%
Misc. Equipment	193,744	-	-	661,055	32.2%	Misc. Equipment	168,967	-	-	576,515	43.7%	13%
Space Heating	308	3,463	-	347,300	16.9%	Space Heating	12,792	-	-	43,646	3.3%	87%
Space Cooling	74,905	-	-	255,574	12.5%	Space Cooling	54,806	-	-	186,998	14.2%	27%
Heat Rejection	-	-	-	-	0.0%	Heat Rejection	-	-	-	-	0.0%	n/a
Pumps & Aux	3,399	-	-	11,597	0.6%	Pumps & Aux	2,008	-	-	6,851	0.5%	41%
Ventilation Fans	66,722	-	-	227,656	11.1%	Ventilation Fans	24,140	-	-	82,366	6.2%	64%
Heat Pump Supplement	-	-	-	-	0.0%	Heat Pump Supplement	1,176	-	-	4,013	0.3%	0%
Domestic Hot Water	6,600	-	-	22,519	1.1%	Domestic Hot Water	6,617	-	-	22,577	1.7%	0%
Total Energy by Utility	499,587	3,463	-	2,050,842	100%	Total Energy by Utility	386,522	-	-	1,318,813	100%	
Site Energy (kBtu)	1,704,592	346,250	-			Site Energy (kBtu)	1,318,813	-	-			Energy Savings
Site EUI (kBtu/ft <sup>2</sup> )				60						39		36%
Total Cost by Type (Low)	\$ 61,299	\$ 3,913	\$ -			Total Cost by Type (Low)	\$ 47,426	\$ -	\$ -			Cost Savings
Total Energy Cost	\$			65,212		Total Energy Cost	\$			47,426		27%
Total Cost by Type (Mid)	\$ 71,241	\$ 5,125	\$ -			Total Cost by Type (Mid)	\$ 55,118	\$ -	\$ -			Cost Savings
Total Energy Cost	\$			76,366		Total Energy Cost	\$			55,118		28%
Total Cost by Type (High)	\$ 81,233	\$ 6,371	\$ -			Total Cost by Type (High)	\$ 62,848	\$ -	\$ -			Cost Savings
Total Energy Cost	\$			87,604		Total Energy Cost	\$			62,848		28%

Heating: boiler 80% et  
Cooling: 9.3 EER  
No ERV

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Total Energy Cost	\$ 76,366				Total Energy Cost	\$ 55,118				28%		
Total Cost by Type (High)	\$ 81,233	\$ 6,371	\$ -		Total Cost by Type (High)	\$ 62,848	\$ -	\$ -		Cost Savings		
Total Energy Cost	\$ 87,604				Total Energy Cost	\$ 62,848				28%		

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# Needs for DD Completion



Lexington Police Project Schedule				September-21					October-21					November-21					December-21					January-22				February-22			
				###	6-Sep	13-Sep	20-Sep	27-Sep	4-Oct	11-Oct	18-Oct	25-Oct	1-Nov	8-Nov	15-Nov	22-Nov	29-Nov	6-Dec	13-Dec	20-Dec	27-Dec	3-Jan	10-Jan	17-Jan	24-Jan	31-Jan	7-Feb	14-Feb	21-Feb		
New Police Headquarters	START	END	DUR.																												
Schematic Design		7/14/2020																													
Community Conversation Response	8/24/2021	10/11/2021	48																												
Design Development	10/12/2021	1/10/2022	90																												
Design Development Estimate	1/11/2022	2/1/2022	21																												
50% Construction Documents	1/11/2022	3/2/2022	50																												
50% Construction Document Estimate	3/3/2022	3/24/2022	21																												
100% Construction Documents	3/3/2022	5/7/2022	65																												
Bidder Prequalification	4/12/2022	5/17/2022	35																												
Authorization to Proceed to Bid	5/18/2022	6/7/2022	20																												
Filed Sub bid Period	6/10/2022	7/8/2022	28																												
General Bid Period	6/10/2022	7/22/2022	42																												
Construction Contract Award	7/23/2022	8/13/2022	21																												
Temporary Police Facility																															
50% Design Development Estimate	9/20/2021	9/27/2021	7																												
Design Development	9/6/2021	10/16/2021	40																												
80% Construction Documents	10/17/2021	11/16/2021	30																												
80% Construction Document Estimate	11/17/2021	12/1/2021	14																												
100% Construction Documents	11/17/2021	12/8/2021	21																												
Authorization to Proceed to Bid	12/9/2021	12/14/2021	5																												
Filed Sub Bid Period	12/17/2021	1/7/2022	21																												
General Bid Period	12/17/2021	1/21/2022	35																												
Construction Contract Award	1/22/2022	2/12/2022	21																												

PROJECT SCHEDULE – MOVING FORWARD

Lexington Police Project Schedule				March-22				April-22				May-22				June-22				July-22				August-22				
				###	7-Mar	14-Mar	21-Mar	28-Mar	4-Apr	11-Apr	18-Apr	25-Apr	2-May	9-May	16-May	23-May	30-May	6-Jun	13-Jun	20-Jun	27-Jun	4-Jul	11-Jul	18-Jul	25-Jul	1-Aug	8-Aug	15-Aug
New Police Headquarters	START	END	DUR.																									
Schematic Design		7/14/2020																										
Design Development	10/12/2021	1/10/2022	80																									
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Construction Contract Award	1/22/2022	2/12/2022	21																									

PROJECT SCHEDULE – MOVING FORWARD

90/110

# 90/110 Bid alternate options - Envelope

Scope	Potential Value
<ul style="list-style-type: none"><li>Roofing materials at sloped roofs<ul style="list-style-type: none"><li>Base design = standing seam metal</li><li>Alternate = architectural asphalt shingles-----</li></ul></li></ul>	\$125,000
<ul style="list-style-type: none"><li>Reduce exterior materials - quality<ul style="list-style-type: none"><li>Brick-----</li><li>Brownstone-----</li></ul></li></ul>	<ul style="list-style-type: none"><li>\$40,000</li><li>\$5,000</li></ul>
<ul style="list-style-type: none"><li>Reduce cost of exterior windows<ul style="list-style-type: none"><li>Base design = Kawneer Curtainwall</li><li>Alternate = Storefront -----</li></ul></li></ul>	<ul style="list-style-type: none"><li></li><li>\$25,000</li></ul> <p>May have a negative impact on HVAC system sizing</p>

# 90/110 Bid alternate options - Interior

Scope	Potential Value
<ul style="list-style-type: none"><li>• Terrazzo flooring at Lobby ~ 900 sq ft.<ul style="list-style-type: none"><li>• Base design = \$48/sq ft</li><li>• Porcelain tile = \$24/sq ft -----</li></ul></li></ul>	\$43,200
<ul style="list-style-type: none"><li>• Unfinished Social Services – 750 sq ft-----</li></ul>	\$75,000
<ul style="list-style-type: none"><li>• Unfinished Training - 550 sq ft -----</li></ul>	\$55,000
<ul style="list-style-type: none"><li>• Remove redlist requirements – Envelope<ul style="list-style-type: none"><li>• 7/2020 estimate \$1,491,000</li><li>• Escalated @ 13% = \$1,684,830</li><li>• Anticipated cost is 5% increase -----</li></ul></li></ul>	\$85,000
<ul style="list-style-type: none"><li>• Remove redlist requirements – Div 09 -----</li><li><ul style="list-style-type: none"><li>• 7/2020 estimate \$855,000</li><li>• Escalated @ 13% = \$967,000</li><li>• Anticipated cost is 5%</li></ul></li></ul>	\$48,000

90/110 Bid alternate options - Site

Scope

- Demo Hosmer
  - Estimated cost for relocation:
    - \$250,000 (including fees)-----\$150,000 net reduction in construction budget
- Open Garage -----\$250,000 net reduction in construction budget  
\$30,000 required in additional fees  
May require a document development schedule increase
- Surface retention stormwater system
  - 7/2020 estimate = \$120,000 -----\$136,000 net reduction in construction budget
  - Escalated @ 13% \$5,000 base design required in additional fees
  - Additional fees / permitting with an early decision, additional required if decision is made after permitting has started (1/1/22) \$5,000 permitting required in additional fees  
Schedule issues with additional permitting  
May require a document development schedule increase
- No solar canopy -----\$1,469,000 (not included in current construction budget)
  - 7/2020 estimate \$1,300,000
  - Escalated @ 13%
- No additional work at Fletcher Field-----\$250,000 (not included in current construction budget)

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# **FLETCHER FIELD & SOLAR CANOPY UPDATE**

## Solar PV Generation v. Consumption

- Assumed building consumption based on latest energy model = ~386,522 kWh annually
- Solar PV maximum potential generation
  - Roof top – 4,000 sq ft = ~73,000 kWh annually
  - Carport – 10,400 sq ft = ~188,000 kWh annually
  - **Total potential** PV generation = 261,000 kWh



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SITE PLAN



## Solar PV Generation v. Consumption

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  - Total potential** PV generation = 261,000 kWh



SITE PLAN





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SOLAR CANOPY PRECEDENT IMAGES



SOLAR CANOPY CONCEPTUAL RENDERINGS





SOLAR CANOPY CONCEPTUAL RENDERINGS



SOLAR CANOPY CONCEPTUAL RENDERINGS





SOLAR CANOPY CONCEPTUAL RENDERINGS



**Tecton**  
ARCHITECTS

PACHECO ROSS ARCHITECTS  
CES  
FUSS & O'NEILL  
ODEH ENGINEERS  
RLB

LEXINGTON POLICE HEADQUARTERS